

Form PTO-1449

U.S. Department of Commerce
Patent and Trademark Office

Atty. Docket No.

Serial No.

00-714-G

09/830,620

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

Applicant: Chad A. Mirkin, et al.

Filing Date:
November 30, 1999

Group:
TBA



U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date
MH	1.	5,284,748	02/22/94	Engelhardt, et al.	 	 	
	2.	5,288,609	02/08/94	Mroczkowski, et al.			
	3.	5,360,895	11/01/94	Hainfield, et al.			
	4.	5,384,265	01/24/95	Kidwell, et al.			
	5.	5,472,881	12/05/95	Beebe, et al.			
	6.	5,599,668	02/04/97	Stimpson, et al.			
	7.	5,637,508	06/10/97	Kidwell, et al.			
	8.	5,751,018	05/12/98	Alivisatos, et al.			
	9.	5,939,021	08/17/99	Hansen, et al.			
	10.	5,990,479	11/23/99	Weiss, et al.			

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
MH	11.	WO 93/10564	27 May 93	PCT	 	 		
	12.	WO 98/10289	12 March 98	PCT				
	13.	WO 99/23258	14 May 99	PCT				
	14.	WO 99/21934	06 May 99	PCT				
	15.	WO 99/20789	29 April 99	PCT				

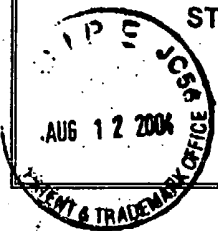
OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

MH	16.	O.D. Velev, et al., "In Situ Assembly of Collordal Particles into Miniaturized Biosensors," <i>Langmuir</i> , Vol. 15, No. 11, pp. 3693-3698, May 25, 1999	
----	-----	--	--

Examiner <i>[Signature]</i>	Date Considered 8/23/04
--------------------------------	----------------------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.

Form PTO-1449	U.S. Department of Commerce Patent and Trademark Office	Atty. Docket No. 00-714-G	Serial No. 09/830,620
INFORMATION DISCLOSURE STATEMENT BY APPLICANT			
Applicant: Chad A. Mirkin, et al.			
Filing Date: November 30, 1999		Group: TBA	



U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date
<i>MM</i>	1. 4,193,983	3/18/80	Ullman et al.			
	2. 4,256,834	3/17/81	Zuk et al.			
	3. 4,261,968	4/14/81	Ullman et al.			
	4. 4,313,734	2/2/82	Leuvering			
	5. 4,318,707	3/9/82	Litman et al.			
	6. 4,650,770	3/17/87	Liu et al.			
	7. 4,713,348	12/15/87	Ullman			
	8. 4,853,335	8/1/89	Olsen et al.			
	9. 4,868,104	9/19/89	Kurn et al.			
	10. 5,225,064	7/6/93	Henkens et al.			
	11. 5,294,369	3/15/94	Shigekawa et al.			
	12. 5,384,073	1/24/95	Shigekawa et al.			
	13. 5,384,265	1/24/95	Kidwell et al.			
	14. 5,460,831	10/24/95	Kossovsky et al.			
	15. 5,472,881	12/5/95	Beebe et al.			
	16. 5,514,602	05/07/96	Brooks, Jr. et al.			
	17. 5,521,289	5/28/96	Hainfeld et al.			
	18. 5,543,158	8/6/96	Gref et al.			
	19. 5,571,726	11/05/96	Brooks, Jr. et al.			
	20. 5,665,582	9/9/97	Kaushch et al.			
<i>MM</i>	21. 5,681,943	10/28/97	Letsinger et al.			

OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

--

Examiner <i>Mark Hurl</i>	Date Considered <i>11-23-04</i>
---------------------------	---------------------------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.

Form PTO-1449

U.S. Department of Commerce
Patent and Trademark Office

Atty. Docket No.

Serial No.

00-714-G

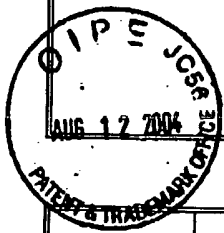
09/830,620

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

Applicant: Chad A. Mirkin, et al.

Filing Date:
November 30, 1999

Group:
TBA



U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
RH	22.	WO 89/06801	7/27/89	PCT	X	X		
	23.	WO 97/40181	10/30/97	PCT				
	24.	WO 98/04740	2/5/98	PCT				
	25.	WO 99/23258	10/30/98	PCT				
	26.	0 630 974 A2	06/21/94	EPO				
RH	27.	0 667 398 A2	8/16/95	EPO				

OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

RH	28.	Alivisatos et al., "Organization of 'nanocrystal molecules' using DNA," <i>Nature</i> , Vol. 382, pp. 609-611 (1996)
	29.	Bain, et al., "Modeling Organic Surfaces with Self-Assembled Monolayers," <i>Angew. Chem. Int. Ed. Engl.</i> , Vol. 28, pp. 506-512 (1989)
	30.	Bradley, "The Chemistry of Transition Metal Colloids," <i>Clusters and Colloids: From Theory to Applications</i> , G. Schmid, Editor, BCH, Weinheim, New York, pp. 459-542 (1994)
	31.	Brust et al., "Novel Gold-Dithiol Nano-Networks with Non-Metallic Electronic Properties," <i>Adv. Mater.</i> , Vol. 7, pp. 795-797 (1995)
	32.	Chen et al., "A Specific Quadrilateral Synthesized from DNA Branched Junctions," <i>J. Am. Chem. Soc.</i> , Vol. 111, pp. 6402-6407 (1989)
	33.	Chen & Seeman, "Synthesis from DNA of a molecule with the connectivity of a cube," <i>Nature</i> , Vol. 350, pp. 631-633 (1991)
	34.	Chen et al., "Crystal Structure of a Four-Stranded Intercalated DNA: d(C ₄) ^{††} <i>Biochem.</i> , Vol. 33, pp. 13540-13546 (1994)
RH	35.	Dagani, "Supramolecular Assemblies DNA to organize gold nanoparticles," <i>Chemical & Engineering News</i> , p. 6-7, August 19, 1996

Examiner	<i>Robert H. ...</i>	Date Considered	<i>08/23/04</i>
----------	----------------------	-----------------	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.

Form PTO-1449

S. Department of Commerce
Patent and Trademark Office

Atty. Docket No.

Patent No.

00-714-G

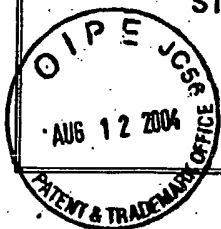
09/830,620

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

Applicant: Chad A. Mirkin, et al.

Filing Date:
November 30, 1999

Group:
TBA



U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date

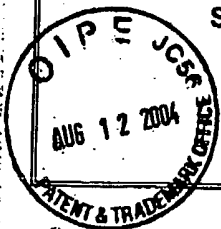
OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

RM	36.	Dubois & Nuzzo, "Synthesis, Structure, and Properties of Model Organic Surfaces," <i>Annu. Rev. Phys. Chem.</i> , Vol. 43, pp. 437-464 (1992)
	37.	Elghanian et al., "Selective Colorimetric Detection of Polynucleotides Based on the Distance-Dependent Optical Properties of Gold Nanoparticles," <i>Science</i> , Vol. 277, pp. 1078-1081 (1997)
	38.	Grabar et al., "Preparation and Characterization of Au Colloid Monolayers," <i>Anal. Chem.</i> Vol. 67, pp. 735-743 (1995)
	39.	Hacia et al., "Detection of heterozygous mutations in BRCA1 using high density oligonucleotide arrays and two-colour fluorescence analysis," <i>Nature Genet.</i> , Vol. 14, pp. 441-447 (1996)
	40.	Jacoby, "Nanoparticles change color on binding to nucleotide target," <i>Chemical & Engineering News</i> , p. 10, August 25, 1997
	41.	Letsinger et al., "Use of Hydrophobic Substituents in Controlling Self-Assembly of Oligonucleotides," <i>J. Am. Chem. Soc.</i> , Vol. 115, pp. 7535-7536 (1993)
	42.	Letsinger et al., "Control of Excimer Emission and Photochemistry of Stilbene Units by Oligonucleotide Hybridization," <i>J. Am. Chem. Soc.</i> , Vol. 116, pp. 811-812 (1994)
	43.	Marsh et al., "A new DNA nanostructure, the G-wire, imaged by scanning probe microscopy," <i>Nucleic Acids Res.</i> , Vol. 23, pp. 696-700 (1995)
	44.	Mirkin, "H-DNA and Related Structures," <i>Annu. Review Biophys. Biomol. Struct.</i> , Vol. 23, pp. 541-576 (1994)
	45.	Mirkin et al., "A DNA-based method for rationally assembling nanoparticles into macroscopic materials," <i>Nature</i> , Vol. 382, pp. 607-609 (1996)
	46.	Mirkin et al., "DNA-Induced Assembly of Gold Nanoparticles: A Method for Rationally Organizing Colloidal Particles into Ordered Macroscopic Materials," <i>Abstract 249, Abstracts of Papers Part 1, 212 ACS National Meeting 0-8412-3402-7, American Chemical Society, Orlando, FL, August 25-29, 1996</i>
	47.	Mucic et al., "Synthesis and characterizations of DNA with ferrocenyl groups attached to their 5'-termini: electrochemical characterization of a redox-active nucleotide monolayer," <i>Chem. Commun.</i> , pp. 555-557 (1996)
	48.	Mulvaney, "Surface Plasmon Spectroscopy of Nanosized Metal Particles," <i>Langmuir</i> , Vol. 12, pp. 788-800 (1996)
RM	49.	Rabke-Clemmer et al., "Analysis of Functionalized DNA Adsorption on Au(111) Using Electron Spectroscopy," <i>Langmuir</i> , Vol. 10, pp. 1796-1800 (1994)

Examiner <i>Robert L. Hunt</i>	Date Considered <i>11/23/04</i>
--------------------------------	---------------------------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**



Atty. Docket No.

Serial No.

00-714-G

09/830,620

Applicant: Chad A. Mirkin, et al.

Filing Date:
November 30, 1999

Group:
TBA

U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date

FOREIGN PATENT DOCUMENTS

	Document Number	Date	Country	Class	Subclass	Translation	
						Yes	No

OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

NH	50.	Roubi, "MOLECULAR MACHINES - Nanodevice with rotating arms assembled from synthetic DNA," <i>Chemical & Engineering News</i> , p. 13, (Jan. 1999)
	51.	Seeman et al., "Synthetic DNA knots and catenanes," <i>New J. Chem.</i> , Vol. 17, pp. 739-755 (1993)
	52.	Shaw & Wang, "Knotting of a DNA Chain During Ring Closure," <i>Science</i> , Vol. 260, pp. 533-536 (1993)
	53.	Shekhtman et al., "Stereostructure of replicative DNA catenanes from eukaryotic cells," <i>New J. Chem.</i> Vol. 17, pp. 757-763 (1993)
	54.	Smith and Feigon, "Quadruplex structure of Oxytricha telomeric DNA oligonucleotides," <i>Nature</i> , Vol. 356, pp. 164-168 (1992)
	55.	Thejn et al., "The use of synthetic oligonucleotides as specific hybridization probes in the diagnosis of genetic disorders," 2 nd Ed., K.E. Davies, Ed., Oxford University Press, Oxford, New York, Tokyo, p. 21-33 (1993)
	56.	Wang et al., "Assembly and Characterization of Five-Arm and Six-Arm DNA Brached Junctions," <i>Biochem.</i> , Vol. 30, pp. 5667-5674 (1991)
	57.	Wang et al., "A DNA Aptamer Which Binds to and Inhibits Thrombin Exhibits a New Structural Motif for DNA," <i>Biochem.</i> , Vol. 32, pp. 1899-1904 (1993)
	58.	Weisbecker et al., "Molecular Self-Assembly of Aliphatic Thiols on Gold Colloids," <i>Langmuir</i> , Vol. 12, pp. 3763-3772 (1996)
	59.	Wells, "Unusual DNA Structures," <i>J. Biol. Chem.</i> , Vol. 263, pp. 1095-1098 (1988)
NH	60.	Zhang et al., "Informational Liposomes: Complexes Derived from Cholesteryl-conjugated Oligonucleotides and Liposomes," <i>Tetrahedron Lett.</i> , Vol. 37, pp. 6243-6246 (1996)

Examiner

Robert [Signature]

Date Considered

11/23/04

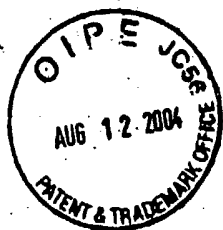
EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.

FORM PTO-1449
(Rev. 2-32)

U.S. Department of Commerce
Patent and Trademark Office

Atty. Docket No.
00-714-G

Serial No.
09/830,620



INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(Use several sheets if necessary)

Applicant:

Chad A. Mirkin, et al

Filing Date:

November 30, 1999

Group:

TBA

U.S. PATENT DOCUMENTS

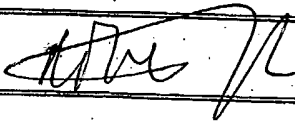
Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
RH	1. 4,023,981	05/17/77	Perronin, et al.	X	X	
	2. 4,454,234	06/12/84	George H. Czerlinski			
	3. 4,846,893	07/11/89	Akasaki, et al.			
	4. 5,053,471	10/01/91	Goto, et al.,			
	5. 5,342,909	08/30/94	Grubbs, et al.,			
	6. 5,639,620	06/17/97	Silman, et al.,			
	7. 5,736,413	04/07/98	Uzan, et al.			
MH	8. 5,766,764	06/16/98	Olli, et al.			

FOREIGN PATENT DOCUMENTS

Document Number	Date	Country	Class	Subclass	Translation	
					Yes	No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

--	--	--

EXAMINER 	DATE CONSIDERED 01/23/04
--	--------------------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449
(Rev. 2-32)

U.S. Department of Commerce
Patent and Trademark Office

Atty. Docket No.

Serial No.

00-714-G

09/830,620



INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(Use several sheets if necessary)

Applicant:

Chad A. Mirkin, et al

Filing Date:

November 30, 1999

Group:

TBA

U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
MM	1. 4,023,981	05/17/77	Perronin, et al.	X		
	2. 4,454,234	06/12/84	George H. Czerlinski			
	3. 4,846,893	07/11/89	Akasaki, et al.			
	4. 5,053,471	10/01/91	Goto, et al.,			
	5. 5,342,909	08/30/94	Grubbs, et al.,			
	6. 5,639,620	06/17/97	Siiman, et al.,			
	7. 5,736,413	04/07/98	Uzan, et al.			
MM	8. 5,766,764	06/16/98	Olli, et al.			

FOREIGN PATENT DOCUMENTS

Document Number	Date	Country	Class	Subclass	Translation	
					Yes	No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

--

EXAMINER <i>Robert L. ...</i>	DATE CONSIDERED <i>01/23/04</i>
-------------------------------	---------------------------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449
(Rev. 2-32)

U.S. Department of Commerce
Patent and Trademark Office



INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(Use several sheets if necessary)

Atty. Docket No.

00-714-G

Serial No.

09/830,620

Applicant:

Chad A. Mirkin, et al.

Filing Date:

November 30, 1999

Group:

1713

U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
WV	1.	WO 97/00995	9 January 1997	PCT				
M	2.	WO 98/28368	2 July 1998	PCT				

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

EXAMINER:

[Handwritten Signature]

DATE CONSIDERED

11/23/01

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449
(Rev. 2-32)

U.S. Department of Commerce
Patent and Trademark Office

Atty. Docket No.

Serial No.

00-714-G

09/830,620



INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(Use several sheets if necessary)

Applicant:

Chad A. Mirkin, et al.

Filing Date:

November 30, 1999

Group:

1713

U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
ML	1.	5,837,859	11/17/98	Teoule et al.	536	25.3	03/30/94
M	2.	6,160,103	12/12/00	Marchand et al.	536	23.1	06/25/97

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
M	3.	WO 00/33079	8 June 2000	PCT				
M	4.	231556	28 August 2001	Japan				

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

M	5.	Fraser, C., et al., "Synthesis of Glycopolymers of Controlled Molecular Weight by Ring-Opening Metathesis Polymerization Using Well-Defined Functional Group Tolerant Tuthenium Carbene Catalysts," <i>Macromolecules</i> , Volume 28, No. 21, p. 7248-7254 (1995)					
M	6.	Sinner, F., et al., "A New Class of Continuous Polymer Supports Prepared by Ring-Opening Metathesis Polymerization: A straightforward Route to Functionalized Monoliths," <i>Macromolecules</i> , Vol. 33, p. 5777-5786 (2000)					

EXAMINER	<i>[Signature]</i>	DATE CONSIDERED	11/23/01
----------	--------------------	-----------------	----------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.